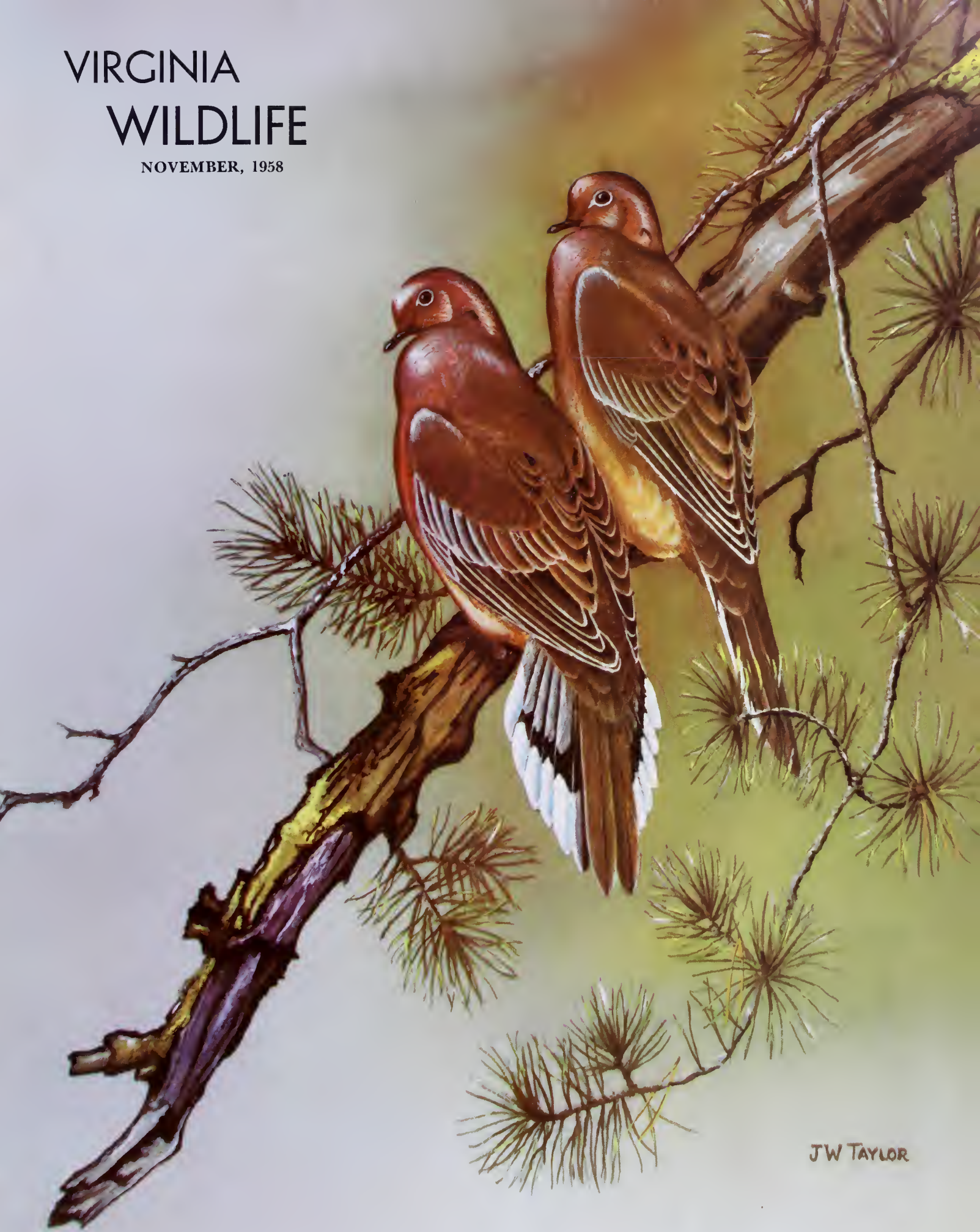
# VIRGINIA WILDLIFE

NOVEMBER, 1958




VOLUME XIX *Price 20 cents* NUMBER 11

## Migration's End

Photo by Allan D. Cruickshank from National Audubon Society

Flyway Representative "Ed" Addy reveals, on page 16, why the waterfowl season has been cut 10 days this year.

# VIRGINIA WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia

***A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting, Fishing and Outdoor Recreation in Virginia***



**Vol. XIX** **NOVEMBER, 1958** **NO. 11**

*In This Issue*



***Cover***

Fortunately for hunters, the mourning dove is becoming more abundant. Virginia dove hunters have been given 65 half-days of shooting this fall, five more than in 1957.

Cover painting by John W. Taylor of Washington, D. C.

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## PROGRESS REPORT: BLACKNECK PHEASANT

The Foreign Game Introduction Program, worked out by officials of the U. S. Fish and Wildlife Service, the Wildlife Management Institute and members of the International Association of Game, Fish and Conservation Commissioners, operates through cooperative agreements between participating states and the other cooperating agencies. Such an agreement has been entered into by the Virginia Game Commission.

The only birds found thus far that might be suited to Virginia have been two subspecies of the Iranian blackneck pheasant, *Phasianus colchicus talischensis* and *P. c. persicus*. This bird is the same size as the ringneck pheasant and feeds principally on seeds, fruits, acorns, grains, foliage and insects. The western strain, *P. c. talischensis*, appears to be the best suited for eastern Virginia, and the eastern strain, *P. c. persicus*, best suited to the Piedmont.

When the 1958 breeding season began, a total of 11 hens and 15 cocks were assigned to the Virginia State Game Farm at Cumberland. Of this number seven hens and 11 cocks were of the western strain, *P. c. talischensis*. With the exception of four birds at the Waterloo Experimental Game Farm at Athens, Ohio, the birds at our state game farm were all of these wild-trapped birds known to be in captivity. No field liberations of the pure strain will be made until the stock is sufficient in number for releases of 300 to 500 birds at a time. Production in the crosses, made by mating pure strain cock birds to a California strain of Chinese ringneck hens, has been outstanding, however, and several hundred of these have been liberated this fall and will be liberated next spring.

Only release areas meeting specifications as outlined under the cooperative agreement will be used. Two releases have been made this fall, one in Charles City County in eastern Virginia and one in Halifax County in the Piedmont. From 300 to 500 birds will be liberated on each release area each year for the next three to five years. A closed season exists and will continue for a minimum of five years, and ten years may be required to adequately evaluate the effectiveness of the program.

—Herman J. Tuttle

***Importation of foreign birds is a tricky business. Here are the facts and fancies of . . .***

# NEW BIRDS FOR OLD

By GARDINER BUMP, *Biologist*
*Bureau of Sport Fisheries and Wildlife*
Commission Photos by Kesteloo

WHEN your editor asked me to write a story on foreign game birds, Mrs. Bump and I were preparing for a trip to India. We had just returned from eight years of searching the brush, bogs, deserts and mountains of Europe and Asia for game birds that might be worth a trial in the United States, however, and since Mr. Shomon wanted the story behind this adventure, it was finally settled by revamping an article written earlier for *Colorado Outdoors*.

"Searching" for birds may not be the right word, for actually we made a careful study of dozens of species right on their home ranges. We found nests, stole eggs and hatched and raised young of Scandinavian capercallie and Iranian pheasants. We analyzed desert homes of francolins in Pakistan; shot and trapped leg-strong chukar in Turkey; sampled the food, probed the insides, studied diseases and parasites of seesee partridges in Swat; and studied effects of snow and rain on Spanish red-legged partridges. We watched the white-winged pheasant on her nesting grounds along the Russian border and sampled the tough dark meat of the snow-cock in a Cuchi tent with nomads of Afghanistan.

We've jeeped and hiked our way from the Bosporus to the Ganges, swapping stories at night of the black-bellied sandgrouse and the 30-pound great bustard in strange towns with Bedouins and Baluchis alike. We learned incredibly ingenious ways of catching birds alive from the trapper-castes of India. Then, back at headquarters in Ankara or Karachi there were field notes to be studied—data on cover and climate, habits and food, egg production, enemies, hunting pressure and a host of other factors to be analyzed before we were ready to recommend a foreign game bird for trial introduction into the United States.

"O.K.," I can hear you say, "So what! I haven't seen any of the fancy birds you're talking about over my gun barrel. Why not?"

To answer that question, we will have to go back a bit into the monkey business and slipshod thinking about introductions that went on before interested state game commissions teamed up with the U. S. Fish and Wildlife Service on this project.

The first release of Iranian blackneck pheasants in the U. S. took place September 27 in Charles City County, Virginia. Note the absence of a white neck ring on the Eastern Iranian cock bird (left).

Dr. Bump, Executive Director Chester Phelps and game biologist Herm Tuttle study a mounted Chinese ringneck pheasant while planning blackneck pheasant introduction.

Ever since LaFayette sent a pair of red-legged partridges to George Washington in 1786, Americans have been looking for new and better birds both to provide more hunting and for general enjoyment. In all, over 100 species have been brought in and turned loose. A few of them, including the ring-necked pheasant, the Hungarian partridge and the chukar partridge, have fitted in so well that they now provide much of the upland game bird hunting in many northern states. Others, like the English sparrow, starling and pigeon, have succeeded so well that they are now classed as pests in many areas. But most of the species introduced have failed miserably to adapt themselves to conditions in the New World.

Why have they failed? Usually because the person or group who liberated them was simply too hopeful and enthusiastic to find out *first* if the birds were suited to their new environment. It is easier to spend some money, get some birds and turn them loose, than to use a little common sense. After all, so men have told me, no one made a careful study of the pheasant or the Hun before they were introduced, and see how well they have done! Yes, but at what a tremendous cost. Figure it out for yourself. These birds were liberated, usually by the thousands, in every one of the 48 states, yet the pheasant only really took hold in 18 states; the Hun in 12. Literally millions of hours of time, effort and money have been wasted in trying to put these birds where they did not belong—millions that might better have been spent in improving conditions for our native game species.

There were other reasons for failure. Bad stock to begin with was one. Too few individuals liberated over too short a period of years was another. Most wild trapped birds scatter widely when turned loose. Many species were set down in the wrong places.

There are still other important questions to consider besides the probability of failure before one is ready to bring in a new game species. For example, does it provide good hunting in the countries where it is native? Will it reproduce rapidly? Is it likely to compete with resident game species for food, shelter or living space? Might one bring in some new disease with the new bird that could destroy our own game populations? One point deserving of particular consideration is the possibility that it will be injurious to agriculture or forest crops if it becomes naturalized.

Even if you are willing to gamble on finding some new wonder bird that will keep your gun barrel hot, you would like to know the odds before you put cash on the shipping crate. Let's check them off.

You have some cards in your corner. The world game bank has at least 1,033 species and sub-species of game birds from which to choose. There is a good chance that one or two of them might do so well in your part of the country as to provide better hunting than you now enjoy. Some of these birds are available, many are not. Those that are can be trapped, quarantined and shipped over for trial liberation. If the species has been thoughtfully chosen on the basis of facts and

# PROGRESS REPORT: COTURNIX QUAIL

In 1956, the Virginia Commission of Game and Inland Fisheries began raising and releasing the Japanese quail, *Coturnix coturnix japonica*. Since that time nearly 9,000 of these foreign game birds have been released in selected areas throughout the State. The coturnix is now being stocked experimentally in 16 states but was *not* brought in under the Foreign Game Introduction Program cooperative agreement as was the Iranian blackneck pheasant.

This bird is smaller and grayer than our native bobwhite. A native of the grasslands of Europe, Asia and Africa, the coturnix was first propagated on a large scale in the U. S. by the Conservation Commission of Missouri. Virginia bought 25 pairs from Missouri in the spring of 1956, and about 2800 young were produced that first season. Raising the bird under game farm conditions offers few difficulties.

In 1956, 336 coturnix were released, mostly in Cumberland and Louisa Counties. In several release areas nests were found and young birds seen, and the birds survived a bitter winter in good shape.

In 1957, more release sites were selected and several releases of 50 or more birds per area were made. Over 7000 coturnix were put out that year, and well over 2000 will be released in 1958.

Although high hopes are held for the success of this stocking, it will take from three to five years to determine if the bird has taken hold. Stocking of coturnix will continue for at least two more years, with stocking to be done in each of the Old Dominion's 12 "resource areas," definite areas in the State having different soil and climatic conditions.

The sub-species of coturnix being liberated is semi-migratory. Some 30 persons have reported taking a Virginia-released coturnix during the winter seasons, 13 of these from out-of-state. Coturnix stocked in Virginia have been taken in Georgia, North Carolina, South Carolina and Pennsylvania, and in 1957 two birds were taken in Virginia that were released in Ohio. Only time will tell whether the coturnix will become an established game species in Virginia.

—Stuart P. Davey

everything is carefully planned and carried out, perhaps one in four or five species may pay off at a cost of $25,000 to $50,000 per trial.

Now for the odds against success. You can't get much information about these foreign birds. You don't know how to get them, or where to put them when they arrive. If the new birds come directly to you from overseas the losses enroute will probably be high, and the birds are likely to arrive in poor condition. You know nothing about feeding or caring for them, so must plant them quickly and take a chance on survival. You have a few bucks to give to the project and a lot of friends who will chip in, but you will soon find out that foreign game birds delivered to your doorstep usually cost from $5 to $25 apiece. Experience has indicated that with most species, from 150 to 500 individuals must be liberated in the same area each year for several years to have much chance of success.

These are the factual chips with which the game of "New Birds for Old" must be played. Joe Doaks, gambler, has perhaps one chance in a thousand to hit the bird pot; Joe Doaks, biologist, may have one in four or five.

Someone is sure to ask, "Why play the game at all with the odds so heavily stacked against success? Why not put all the sportsman's dollar into improving conditions for our native wildlife?"

This idea is fine but not always practical. There are limitations on what can be done. New trends in land use, new methods of controlling weeds by chemicals and of handling crops by machinery, new types of drought- and tick-resistant cattle all spell changing conditions on the land that mothers our game crop. As a result our native species are decreasing in abundance and may vanish altogether. There are other problem areas which were never occupied by game birds. The dry mountain regions of the West in which the chukar from India and Turkey is rapidly becoming abundant are a good example of such an area in which the gamble of introducing a new game bird seems to be paying off in hunting dividends.

Lastly, there are vast sections of the United States where there were never more than two or three resident game bird species. In the South there are only three—the bobwhite, turkey and ruffed grouse. By way of comparison, in India there are 70 native species.

It is easy to see why many thoughtful sportsmen and game biologists see real possibilities in working with foreign species—but only if one goes about it in a slow, careful, scientific way. Such a program, organized by the U. S. Fish and Wildlife Service and interested state game commissions, is now under way. A biologist is constantly checking over dozens of game possibilities overseas and selecting a few for intensive study. Analyses of the species studied are sent to the state game commissions.

If the state commission decides to make a trial, the Service arranges for the trapping, quarantine and shipment by air of enough wild-caught birds to make an adequate liberation each year for a period of at least three years.

During the past seven years dozens of species have been studied under

| SOME POSSIBLE BIRDS FOR THE U. S. | HOME RANGE | HABITAT |
|---|---|---|
|  **Chukar Partridge** *Alectoris graeca* | Eastern Europe and southern Asia. | Dry, rolling hills; a steep mountain slop bare or wooded a usually rocky. |
|  **Red-legged Partridge** *Alectoris rufa* | Western Europe. Introduced into England. | Flat, well-farmed v leys, rolling uplands a steep, often brush-c ered hillsides. Does r like dense cover. |
|  **Iranian Black-necked Pheasant** *Phasianus c. talischensis and persicus* | Wet to dry southern and southeastern coastal areas along the Caspian Sea and east through fairly dry, river valleys. | Semitropical to lo temperate zone ve tation; fields of ri wheat, corn, cotton bacco and sugar ca open to dense brush woodlands. |
|  **Reeves Pheasant** *Syrmaticus reevesii* | Hill country of central and north China. Introduced into France and eastern Europe. | A woods pheasant p tial to second gro forest and scrub. |
|  **Black Francolin** *Francolinus f. melanonotus* | Eastern Nepal and northern India. | Grassy, brushy or fo covered flat or h country if interspe with cultivation. |
|  **Gray Francolin** *Francolinus pondicerianus* | Southern Iran east to central India. | Dry, warm open sc or weed desert o weedy areas of o cultivation. |
|  **Red Junglefowl** *Gallus g. murghi* | Kashmir, Nepal and central India east through Burma. | Second-growth fore and brushy areas with or without an in spersion of cultiva or pasture. |
|  **Coturnix or Japanese Migratory Quail** *Coturnix c. japonica* | Eastern China and Japan. Introduced into Hawaii. | Open grass or past lands among clump tall and short gr Also found in cultiva fields and in open sc |

this program but only a few have been found to be worth a trial.

Most of these birds are suitable for trial only in western United States. Two of them, however, the black francolin and the Iranian black-necked pheasant, offer good possibilities in the Southeast. The search for a pheasant that might thrive here goes back at least 50 years. The ring-neck, so adapable to northern farmlands, while tried many times, has almost uniformly failed to take south of the Mason-Dixon Line. One of the more logical reasons advanced for this is that the original home of the ring-neck in Asia was in a region further north and substantially cooler than is the climate in Virginia or in other southern states. The blackneck, on the other hand, lives where tea, rice, tobacco, cotton, sugarcane, oranges, wheat and corn are staple crops and rainfall varies from 20 to 60 inches a year. It should, therefore, be climatically adaptable to farmlands in the south Atlantic and Gulf States. Crossed with the ringneck, it might well be worth a trial from North Carolina to Maryland and west through Tennessee and Kentucky.

Many southern states have expressed interest in the blackneck but until two years ago there was not one bird in captivity anywhere. In the spring of 1956, Mrs. Bump and I collected several hundred blackneck eggs in the jungles along the Caspian seacoast, hatched them under hens and sent the chicks to Karachi where they were raised in the only safe place available — our spare bedroom. When the young pheasants were 14 weeks old, 158 of them were flown to a game farm in the United States. Here luck deserted us, for, when we returned to Washington 10 months later, less than 90 of these birds were still alive. Worse yet, only 30 of these were of the western Iranian strain particularly suitable to the South. To save this strain, seven hens and 11 cocks were quickly transferred to the Virginia State Game Farm near Cumberland where they would be under the experienced eye of superintendent Dennis Hart.

Then began an intensive battle to build up an adequate brood stock. New pens were constructed, brooders readied and the countryside scoured for broody bantams under which to incubate the precious eggs. From the Ohio Department of Natural Resources came a donation of Chinese ringneck hens with which the surplus Iranian cocks were crossed. When the eggs hatched, no babies ever received more care than did these birds.

The crisis passed as swiftly as it came, for by August 1, 1958, game farm records disclosed 84 pure Iranian youngsters and 1,176 cross-bred birds on hand. Dennis Hart, to whom great credit is due, Mrs. Bump and I breathed easily again, and director Phelps and biologist Herm Tuttle happily laid plans for the first trial liberation of Iranian blackneck-ringneck crosses in history!

It is, of course, much too early to tell whether or not these pheasants will take. Trials of some of the other species previously mentioned also offer considerable promise in the Southeast. At least they will be given every chance, backed by all the skill and know-how that trained biologists in Virginia can give them.

Illustrations by Lyndle Dunn from *Colorful Our* and by J. W. Taylor

| CLIMATE | FOOD | REPRODUCTION | WEIGHT, ETC. |
|---|---|---|---|
| Will stand temperatures rom —20° to 110° F. n a zone of 8-25" of ainfall. | Grass, weed and shrub seeds, fruits, grain, green food and insects. | One brood a year. Eggs 8-13; easy to raise in captivity. | Weight 14-20 oz.; a fast flier and runner; excellent eating. |
| Will stand temperatures rom —10° to 105° F. vhen the average rain-all is 10-25" a year. | Similar to the chukar but prefers more green food and insects. | One brood a year. Eggs 9-14; can be raised in captivity. | Weight 14-20 oz.; flies fast but runs more often than does the chukar; excellent eating. |
| Will stand temperatures rom 25° to 100° F. with a rainfall from 20-60" a /ear. Cannot stand nuch snow. | Seeds, fruits, acorns, grain, green food and insects. | One brood a year. Eggs 9-11; easy to raise in captivity. Will cross-breed with our ringneck pheasant. | Weight 1½-2½ lbs. In habits resembles our ring-necked pheasant. Climatically suited to the southern states. |
| Will stand cold winters and warm summers where the precipitation s 30 to 60" a year. | Acorns, beechnuts, buds, berries, other wild fruits, weed seeds, green food, worms and insects. | One brood a year. Eggs 7-15. Fairly easy to raise in captivity. | Larger than a ring-necked pheasant. Tail 3 to 5 feet long. Roosts in trees. |
| Will stand fairly cold winters and hot summers where precipitation is 40 to 70" a year. Can-not survive heavy snows. | Omnivorous. Seeds, grain, berries, other fruits, grasshoppers, ants and earthworms. | One brood a year. Eggs 6-10. Fairly difficult to raise in captivity. | Weight 12-20 oz. Flies straight and fairly fast. Lays well to a dog, usually rising in ones or twos. |
| Will stand temperatures from 20° to 120° F. in a zone of 7-40" of rain-fall. Cannot stand much snow. Needs little water. | Grasses, mustard and other weed seeds. Consumes many more plant and less animal foods than does the black francolin. | Two and occasionally three broods a year. Breeds in any month of the year after warm rains. Eggs 7-10. | Weight 9-12 oz.; flies like the black partridge but runs more. Usually roosts off the ground in shrubs or low trees. Good eating. |
| Will stand temperatures of 20 to 110° F. with a precipitation of 30 to 70" a year. Not both-ered by light snow. | Omnivorous. Grains, weed seeds, berries, buds, mast, roots and green food. Also insects and worms. | Usually one brood a year. Eggs 5-8. Easy to raise in captivity. | Size of a bantam hen. Resembles a game fowl but does not hold its tail erect. |
| Will stand temperatures of 30° to 100° F. where the rainfall is 20-100" a year. Winters where there is little or no snow. | Rather similar to that of the bobwhite. Grass and weed seeds and in-sects. | Probably 2 broods a year. Eggs 5-8. Breeds at 6-8 weeks of age in captivity. A prolific egg producer. | Weight 3½-4½ oz.; a fast, low flier. Sits well to a dog. Usually migratory, often moving about at night in large flocks. |

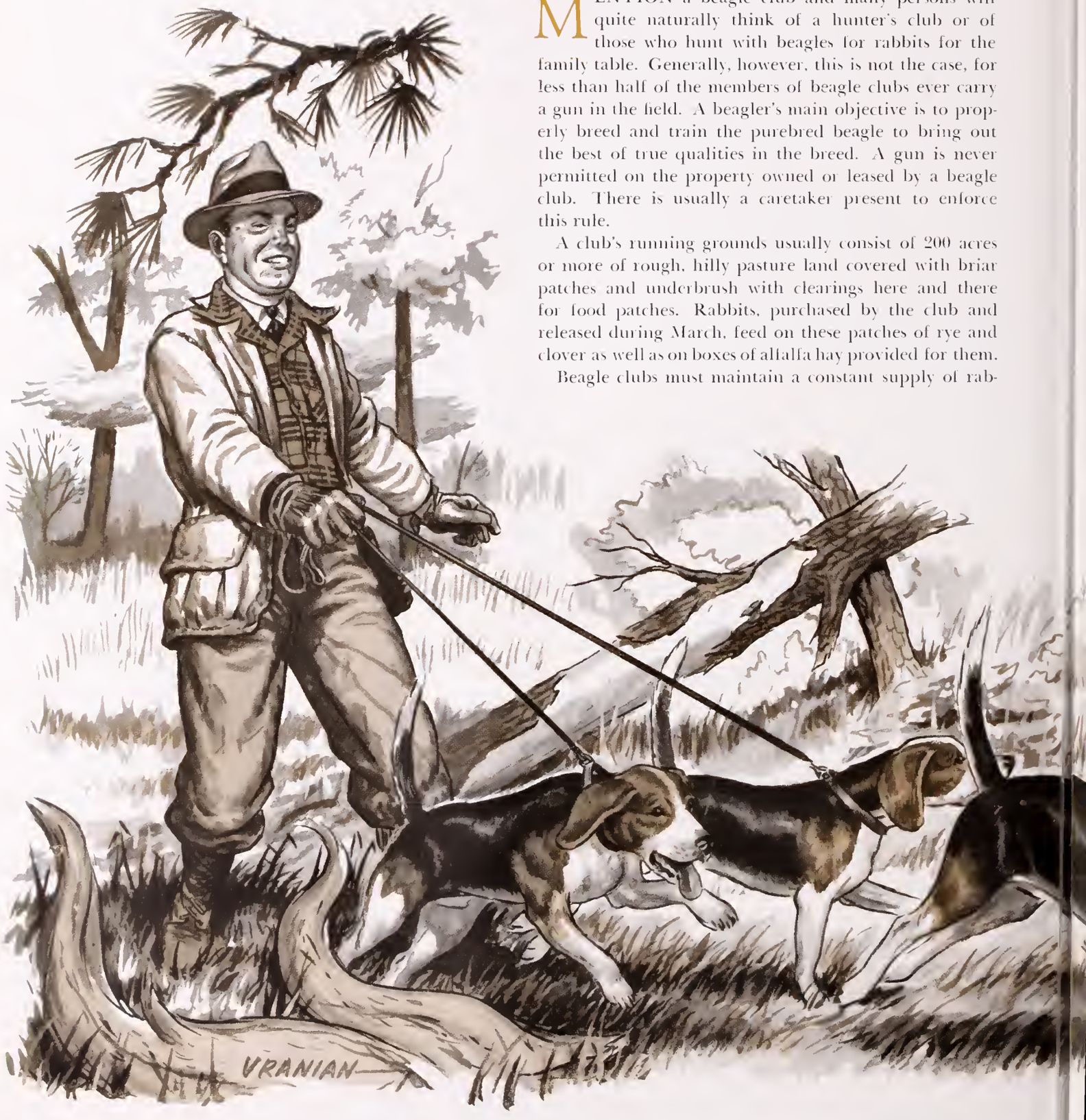
# BEAGLING

By R. H. MILLER

MENTION a beagle club and many persons will quite naturally think of a hunter's club or of those who hunt with beagles for rabbits for the family table. Generally, however, this is not the case, for less than half of the members of beagle clubs ever carry a gun in the field. A beagler's main objective is to properly breed and train the purebred beagle to bring out the best of true qualities in the breed. A gun is never permitted on the property owned or leased by a beagle club. There is usually a caretaker present to enforce this rule.

A club's running grounds usually consist of 200 acres or more of rough, hilly pasture land covered with briar patches and underbrush with clearings here and there for food patches. Rabbits, purchased by the club and released during March, feed on these patches of rye and clover as well as on boxes of alfalfa hay provided for them.

Beagle clubs must maintain a constant supply of rab-



bits to be able to conduct their trials, for each trial usually requires the jumping from its natural habitat of 75 rabbits. Each rabbit is run only once during the trial, for only 15 to 20 minutes and by only two dogs. Rarely is a rabbit overtaken by a pair of dogs in such a short length of time. If pressed too hard, the rabbit dives into a nearby hole or rockpile.

The popularity of the sport of beagling is increasing by leaps and bounds. Men and women from all walks of life have found that they enjoy beagling. Beagle clubs usually hold trials once a month from October through April, on weekends.

Every club has its clubhouse, be it simple or expensive, where meals prepared by the wives of the members are served. Such meals, which usually consist of country-cured ham, string beans, mashed potatoes and gravy, apple pie and coffee, are appreciated by those who have been following the hounds all morning.

All trials are run under American Kennel Club rules. All dogs entered in trials must be registered with the A.K.C., but only in license trials are they separated as to sex. In each trial, two classes of hounds are run, those 13 inches and under, and those between 13 and 15 inches, measuring at the top of the shoulders.

Although there are many beagle clubs in Virginia — the National, Fauquier, Old Dominion, Fairfax, Coon and Beagle, to name a few — Virginians can also attend a great many others in adjoining states. Most clubs have at least 100 members, and annual dues run from five to ten dollars. One need not be a club member to run his dog in a field trial. All that is required is an A.K.C. listed or registered dog and the entry fee, usually two dollars.

At trials, dogs are braced in pairs. When a rabbit is jumped, both dogs are placed on the trail of the rabbit, and they are on their own. They are followed by two men who have been selected by the club to judge the meet. These men, who are paid a nominal fee for their services, have handled and trained beagles for many years and understand the capability of the beagle under varying conditions. I have yet to see a judge who did not earn his fee.

If you own a beagle don't turn him loose when the season is over. Take him to your favorite hunting ground and let him go. Night or day, light up your old corncob and listen to him shag that old bunny. You'll find contentment you never felt before. That weekend, take him to the trial in your locality, and compete for a beautiful trophy. You'll feel good inside, and old Rover will feel better towards you.

Before you know it, you'll be planting a rabbit food patch of your own, and you'll respect the little cottontail as a friend, which we must all do if he is to continue to be a part of our life.

Beagling is not all play, but there is a lot of fun in addition to the work involved, and I believe you'll live longer for it. Even if you live in a town or a city, it is not impossible to own a good beagle. They are small, gentle, kind, easily trained animals and do well in small quarters, yet they are hardy enough to be able to take it in rough going.

Beagles run entirely by scent, so they must be taken afield and trained on wild rabbits until they become proficient in their work. When very young, they should be taught to obey commands, to lead, to be tied, and to get used to being transported.

After a beagle has been yard-broken, it will soon be ready to be taken into the field for training. If the owner is not equipped to do this, it is well to turn the dog over to a professional at this time.

There are qualified trainers in all parts of the country who make their living training beagles the year 'round for a fee of $15.00 per month. After the dog is eight months old it usually requires only two or three months of training to learn to run well. Then a workout on the club grounds on weekends should keep it in good running condition between trials.

When selecting a puppy it is best to purchase only from a reputable breeder, a person who has the best reputation within his club and who attends the trials and enters his dogs in such trials. Buying a beagle is like buying anything else — you usually get what you pay for. A good puppy costs the breeder a good sum of money, and as long as a person is going to spend time and money on the puppy he should buy the best he can afford. Good puppies at eight weeks usually sell for $25 to $50, depending on the breeding.

Attend the next field trial in your locality. You'll be glad you did.

# MORE FISH from FARM PONDS

By ROBERT G. MARTIN, *Assistant Chief, Fish Division*

BETWEEN 1500 and 2000 ponds averaging one to two acres were constructed on Virginia farms this year, bringing the total number of farm ponds in the State to about 17,000. In addition to irrigation and stock-watering benefits to the owners, these ponds have enormous potential value to the 300,000 fishermen of Virginia. These ponds could easily produce an average of 100 pounds of fish per acre per year, or a total potential weight of at least 1,700,000 pounds—over five pounds of fish for each licensed fisherman in the State! More important would be the millions of hours of healthful recreation provided.

It is doubtful, however, if even a *tenth* of this potential harvest and fishing pleasure is now being realized. Poor planning and mismanagement of ponds are usually responsible. Good fishing doesn't just happen but is the result of carefully laid plans, adequate financing and proper management.

Recent studies by the fish division which have greatly increased the amount of information available on farm pond management in Virginia are the basis of this article, which is intended to acquaint farm pond owners with basic pond management techniques.

### Selection of Pond Site and Construction

County Soil Conservation Service agents will furnish the necessary technical assistance in pond construction when the pond can be utilized in an over-all farm management plan. Since most ponds are built primarily for stock water and irrigation, the fishing they provide is usually a secondary consideration. To realize the greatest possible fishing potential, however, the pond should meet these conditions:

(1) The pond watershed should be fully protected by permanent pasture or by trees. If cattle are to use the pond, they should be restricted by fencing to a small area or watered below the dam in a watering tank. Muddy ponds are never productive.

(2) The ratio of watershed to pond area should be kept to a minimum. A ratio of five to 15 acres of watershed to each surface acre of pond area has been found to be sufficient to maintain adequate water levels even during the driest years in Virginia. A greater ratio not only requires more expensive spillway construction but makes effective fertilizing for maximum fish production impossible. Fertilizer applied to ponds with large watersheds usually leaves the pond with the first heavy rain.

(3) Every fish pond should be built to include a drain pipe. A four-inch pipe, placed so that the pond can be completely drained, is the minimum size recommended for a two-acre pond. The ability to regulate water levels or to drain the pond is essential for controlling water weeds or unbalanced fish populations.

(4) Deepening the shoreline to eliminate shallow water is a weed-preventative measure that should be taken during the construction period. Grade the edges down at a steep slope (2 to 1) to a depth of two feet.

(5) Insist that the spillway be sufficiently wide to insure that the maximum outflow will be less than three inches in depth to minimize the loss of large fish.

### Stocking

The first step is to eradicate the native fish present in the feeder stream. This may be done with rotenone applied as soon as the dam is closed. No matter how small the stream feeding the pond, young catfish, suckers or other fish are likely to be present. Check the pond again just before stocking for the presence of "wild fish" and, if they are found, repeat the rotenone application. See that no rotenone-treated water leaves the pond to possibly destroy fish downstream.

Fingerling stocking of largemouth bass and bluegill at a rate of 100 bass and 1000 bluegill per acre of water is the best combination and ratio for most properly fertilized farm ponds in Virginia. Bluegills are usually stocked in the fall and bass the following spring. Reduce this stocking rate by one-half for unfertilized ponds. Fish for stocking farm ponds are available from the U. S. Fish and Wildlife Service through your local Soil Conservation Service agent.

Stocking with adult fish or fish seined from a neighbor's pond or creek is to be *avoided* because of the chance of either overstocking, resulting in overproduction and subsequent slow growth, or a spawning failure by one of the stocked species, allowing the other species to become too abundant. Intensive studies have shown that fingerling bass and bluegill stocked at the prescribed rates and ratio will result in the highest number of catchable-size fish in from 12 to 18 months.

Crappie, bullheads or other such species should never be stocked in small ponds. Experience has shown that such stocking invariably leads to an unbalanced population and poor fishing. Overstocking farm ponds is one of the major causes of ponds getting off to a poor start.

### Fertilization

Fish respond to fertilization in exactly the same manner as corn and other crops. The standing crop of fish obtainable from most unfertilized Virginia ponds is less than 200 pounds of fish per acre. Properly fertilized ponds, on the other hand, can support over 400 pounds of fish per acre.

Generally speaking, fertilizers high in phosphorous and nitrogen such as 5-10-5, 8-8-2 or one of the concentrated water soluble fertilizers made especially for farm ponds (a 20-20-5 analysis) should be used. Application at the rate of approximately 100 pounds per acre of 5-10-5 or 8-8-2 or 40 pounds per acre of the more concentrated

20-20-5 should be started by mid-March and continued every two weeks until a bright object such as a tin can cannot be seen deeper than 18 inches. Once this desired color or "bloom" caused by an abundance of microscopic plants and animals used by fish for food has been attained, the rate of fertilizer applied every two weeks can be decreased by about 50 percent. Continue the bloom from March through October since this is the major growth period for bass and bluegill in Virginia.

The fertilizer may be broadcast over the shallow area of the pond or spread on three- by five-foot platforms placed a few inches under the water. If platforms are used, they should be located near the shallow end of the pond or where wind action can be expected to adequately distribute the dissolved fertilizer.

### Management and Harvest Following Stocking

"Dear Sir: My pond is full of four- and five-inch bluegill and I can't catch a decent-sized bass. Please advise."

Letters such as this are received regularly by the Commission's fish division. After three or four years, most neglected ponds exhibit these symptoms. In order to explain why this happens and what can be done to prevent or correct this condition, it will be necessary to review briefly the largemouth bass-bluegill relationship in farm ponds.

Humey Olive takes 'em from his own farm pond.
SCE Photo by V. E. Davison

In addition to providing angling opportunity, the bluegill's major function is to serve as food for the bass. The extremely high reproductive ability of the bluegill enables it to perform this assignment well. The largemouth bass is responsible for thinning out bluegill reproduction sufficiently to assure satisfactory growth of both species. When this occurs, the pond is said to be *in balance*. The original stocking rate of 100 bass and 1000 bluegill per acre assures balance the first two years, and growth of both species is usually excellent. Yearling bass will commonly average 10 to 12 inches in length and bluegills six to seven inches. Angling success is usually extremely high. Experimental records have shown that up to 70 percent of the total bass population can be removed at this time with very little angling effort.

If, at this point, the bass population is reduced to any considerable degree, trouble lies ahead. A high fisherman harvest of these 10- to 12-inch bass during the first two years will result in *immediate overpopulation by bluegill.* Too many three- and four-inch bluegill which would have been eaten by these bass will survive.

As a consequence, the pond quickly becomes full of bluegill too small to afford any angling pleasure and too large to serve as bass forage for any but "lunker" bass. If let alone, this condition becomes progressively worse each year until finally the pond will contain only a few large "lunker" bass with perhaps a sprinkling of intermediate-sized bass and literally thousands of four- to six-inch bluegill.

To prevent the development of this condition, measures must be taken to maintain a high bass population and subsequent high predation on bluegill. This means complete restriction of largemouth bass harvest during the first two years and a relatively low bass harvest rate thereafter. In fact, our experimental data indicates that *not a single one- to two-pound bass (12-15 inches) should ever be removed!* Fish for them by all means, but release them not only to catch again but to continue their major role in reducing intermediate-size classes of bluegill. Larger bass should be removed when caught, and if large numbers of 9- to 10-inch bass are frequently hooked some of these may also be safely harvested. Bass fishing should be primarily for sport or trophy, never for meat alone!

Maximum bluegill harvest, on the other hand, should be the goal every year after the first year following stocking. A well-managed fertilized pond should yield from 100 to 150 pounds of bluegill per acre each year.

### Treatment of a Sick Pond

A pond which has gone unmanaged can be renovated. Nine out of ten ponds over four years old have accumulated too many bluegill, and stocking with small bass will not correct this situation for the bluegill present will be too large for them to eat.

The owner of an out-of-balance pond has two alternatives: (1) complete elimination of the existing population and restocking with fingerling bass and bluegill at prescribed rates, or (2) removal of at least 50 percent of the bluegill population. Best results can be expected using the latter method if the bluegills removed fall

within the intermediate-size class, 3½ to 5½ inches. This second choice has one obvious advantage over complete elimination of the existing population and beginning anew in that fishing need not be curtailed and adult fish are immediately available for harvest. Preliminary experimental data have indicated that this measure is highly successful in restoring mismanaged ponds to fishable condition.

The most effective method of removing abundant bluegill is by draining the pond down to an extremely low level and seining. A five-acre pond may be drawn down to less than a tenth of an acre to facilitate removal of excess bluegill without any harm to the remaining bass and bluegill. This work should be done between mid-October and the first of December, when water temperatures are low enough (below 60 degrees) to handle the fish safely. Draining at this time also allows ample time for spring rains to refill the pond before the May spawning season.

Any suckers, bullheads, crappie or other species not adapted to ponds should be removed, while all bass and catchable-size bluegill should be left in the pond to support the fishing for the coming year and also serve as brood stock.

After such treatment, both bass and bluegill reproduction is extremely heavy. The heavy bluegill spawn is more than utilized by the young bass. Seining a newly treated pond in June or July will usually reveal more young bass than bluegill. After this first successful spawn the pond should be managed and fished in accordance with the general principles set down above.

In ponds that cannot be drained or seined, wire traps may be utilized to reduce bluegill numbers. If sufficient bluegill cannot be removed by trapping or draining, it is recommended that the entire fish population be eliminated with rotenone and the pond restocked.

***The Farmer's Point of View***

# Henry Brown POSTS His Farm

By HOMER QUANN, *Farm Editor, WSVA, Harrisonburg, Virginia*

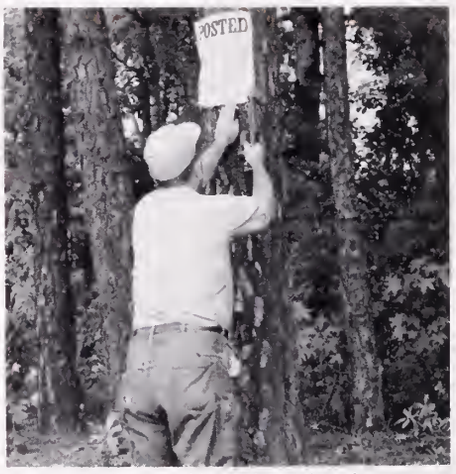
For many years, Henry Brown of Rockingham County, Virginia, had worked on someone else's farm. He had skimped and saved.

Finally, at long last, he had enough money for a down payment on a farm. After looking around carefully, he found just about what he had always dreamed of owning: a nice home, about 150 acres of land and a good stream running in the back of the place.

Henry bought the farm. He was a hard working farmer and landowner and soon rounded his place into shape.

Henry Brown was a good neighbor, as most all country folks are. When chores were done, he liked to go down on the river in back of the place to catch a few perch. Occasionally a bass would fight it out with Henry.

Being an industrious worker and making ends meet didn't give Henry much time for sport himself, but a lot of other folks used the Brown farm to fish and hunt. Didn't anybody ask very often. The land wasn't posted and Henry was glad folks could use his land for a little fun. After all, he hadn't always owned land himself and had been obliged to use somebody else's once in a while.



What would you have done?

One day Henry got a call from a neighbor.

"Isn't that your steer down on the road?" Naturally, Henry didn't think so. He had been down in that section of pasture just Sunday afternoon looking around. However, when he investigated, sure enough it was his steer—three steers, to be exact.

Well, it took a good hour to round them up and get back to the house. Since it was hay-making time, that didn't set too good with Henry. But he was a good-natured fellow and he just straightened up the fence and let it go at that.

Wasn't but a few days though when squirrel hunting time came around.

Henry had heard some shots from the woods. Like all other times when his place had been used he didn't think much about it and went on about his work . . . just somebody squirrel hunting.

Long about evening one of the boys came running home huffing and puffing. "Pa! Pa-a-a! One of the cows is down! Looks like it was shot!"

Henry didn't waste any time covering ground in the old pickup. When he came to the woods, sure enough, there it lay—dead as a door nail.

Henry didn't go back to the house right away. He told the boy to take the truck and go on back. This gave Henry time to think things over.

As he thought, he walked. There he was at the river. He hadn't noticed so much before, but there was paper all over the bank. A fire had been burned sometime before and an old tire lay there. Every so many feet along the bank beer cans were strewn by folks fishing.

Next day Henry Brown was in town. He stopped in at the printer's and picked up some signs. They read, "POSTED — NO HUNTING OR FISHING WITHOUT WRITTEN PERMISSION."

If you were Henry Brown, what would you have done?

Originally used as a feature on the daily "Dinner Bell" program, WSVA, Harrisonburg. Mr. Quann, a native of Culpeper, Va., has studied agriculture and maintains an experimental farm on WSVA property. He is also an avid sportsman and enjoys hunting and fishing.

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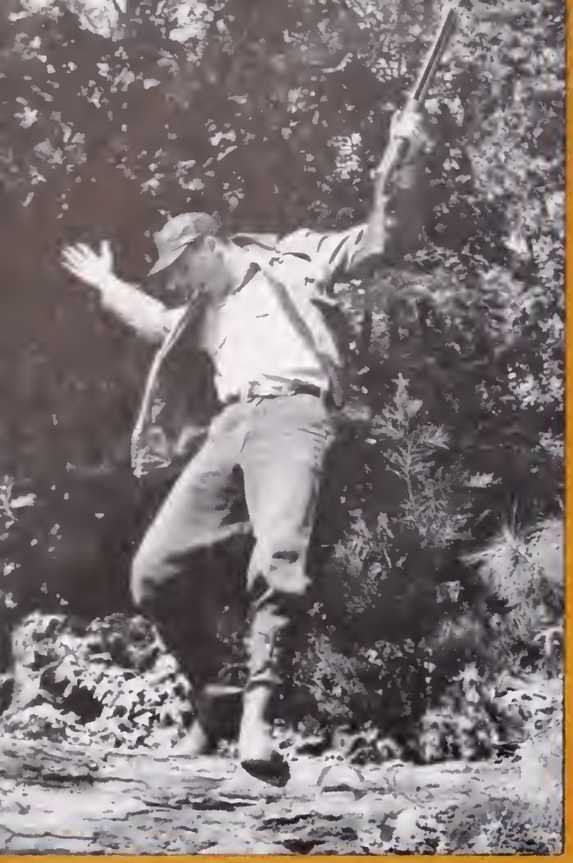
**Subject: "Why is conservation of wildlife important to youth?" Students from all Virginia schools, in grades 5-12, are eligible. Essays must be submitted through the schools, which must send in official entry cards. Essays must be mailed to Box 1642, Richmond 13, Va. by February 28, 1959.**



DO identify your target before you shoot.

# LOOK CAREFUL *before you shoot!*

DON'T step on logs; keep safety on.

DON'T get anxious and swing on your partner.

DON'T pass gun to partner without opening action.

DO treat every gun with the respect due a loaded gun.

Commission photos of Cutler and J. M. Ittner by Kesteloo

DON'T let the Old Man with the Scythe use you to claim his next victim.

DON'T shoot blind into brush; know your partner's location.

DON'T point muzzle at your partner; point it away in case of a fall.

*The story behind*

# This Year's Waterfowl Regulations

By C. E. ADDY, *Flyway Representative, Bureau of Sport Fisheries and Wildlife*

Sports Illustrated Photo

THE regulations for the current hunting season have undoubtedly jolted some ardent waterfowl hunters, particularly those in the coastal states comprising the Atlantic Flyway. Not only is the 10-day cut in season length hard to take, but the restrictions on the bag of canvasbacks and redheads will put a crimp in the sport of hunters who specialize in "can" and redhead shooting. However, such restrictive regulations have not come as a surprise to many sportsmen who make it a point to keep posted on trends in duck populations.

The Atlantic Flyway serves as a major wintering area for many of the diving ducks. Until the last year or two, most of the country's canvasbacks wintered in the coastal bays from Maryland to North Carolina. Annual surveys during January have shown a marked decline in the numbers of "can" within the flyway. This year there were seen only about 25 percent of the number recorded at the peak in 1954. The bulk of the redheads winter outside the Atlantic Flyway, primarily along the coast of Texas and Mexico. Although a slight increase was recorded on the January survey for the redhead in the flyway, the population is still only about half that recorded in 1955. The ringneck is another species that appears to be in bad straits. Population surveys on this species indicate the lowest wintering population of the past 10 years. The scaups have likewise shown a rather precipitous decline of 50 percent since 1953.

Although marked decreases have been recorded for many of the puddle duck species, the one we are most concerned about is the black duck. The January survey showed a drop of about a third from last year, and the population is more than 30 percent below the 10-year average.

There is much that we do not know about what makes or breaks duck populations. With the limited outlay for research it will be many years before we have the solutions to many of the problems confronting the Federal Government and the states in their attempts to manage the resource. However, investigations of populations through banding, kill surveys, habitat studies and population surveys have progressed far enough over the years to give us a few good clues as to what is probably happening in today's situation. Let's take a look at some of these findings.

At least 80 percent of the continental duck population is produced north of the border in Canada. About half the production is concentrated in the southern portions of the prairie provinces of Alberta, Saskatchewan and Manitoba and the prairie states of North Dakota, South Dakota and western Minnesota. It is in this area that the bulk of the mallards, pintails, blue-winged teal, canvasbacks and redheads are produced. The majority of the scaups and ringnecks are produced north of this area.

Undoubtedly the prairie states at one time produced a greater proportion of the duck population than they do today. The elimination of millions of water areas, primarily through drainage, has drastically reduced production in the United States. It is with apprehension, too, that we view signs of major drainage programs already taking shape in Canada.

The "pothole" region of the United States and Canada is an area of highly fertile soils but of relatively low rainfall. During wet years the prairies are studded with millions of water-filled potholes and duck production is high. During severe droughts well over 90 percent of the potholes dry up and millions of ducks are forced to wander northward in search of nesting sites. When this happens it is believed that the production of ducklings by these prairie nesters, which have gone north, is not nearly as good as it would have been on a well-watered prairie.

We have been blessed with good water conditions on the prairies in recent years, but the signs of an approaching severe drought period are present. Last year the situation was saved by timely rains. This year there was little snowfall and the spring rains did not materialize over a wide area, particularly in the highly important southern portion of Saskatchewan.

Puddle ducks, particularly the mallard, pintail and black duck, nest early. On the average it is believed that only about 45 percent of the first nests are successful. However, it is characteristic of puddle ducks to re-nest one or more times so that a rather high percentage of pairs may eventually bring off broods. This is not so with most divers. Generally speaking, diving ducks make one major nesting attempt, and if this fails, there is no significant amount of re-nesting.

The "can" and redhead nest over water, usually building their nests on dead emergent vegetation. The initial success of these over-water nesters is considerably greater than that of the ground-nesting puddle ducks. A little over 70 percent of canvasback nests usually hatch successfully where water conditions are favorable.

This year, however, water levels were not high at the beginning of the breeding season and there was a steady decline during the breeding season. As a result, many canvasback nests which were built over water had dry land beneath before the eggs hatched. Under such condi-

tions it is doubtful that canvasback nesting success was any better than the first nestings of the puddle ducks. For this reason it is expected that the nesting success of the prairie nesting "cans" and redheads will be low this year.

It is an objective of waterfowl management to replace natural mortality, as much as possible, with hunting mortality. To do this most effectively requires an intimate knowledge of the importance of natural mortality and when it occurs. Care must be taken, however, that hunting, together with natural mortality, does not reduce the population to the point where it cannot fully populate the breeding ground.

Unhunted populations, such as the whistling swan, exhibit buildups and declines in numbers in the same manner as species which are hunted. For this reason it is sometimes difficult to determine to what extent hunting kill is important in limiting the size of a population. Through the analysis of kill surveys, population surveys and banding, considerable information on this point can be obtained.

With the canvasback and redhead it would appear that *hunting is an important consideration.* Here are some of the facts which lend support to this view:

1. We have discussed previously the deficiencies in breeding conditions and the probable lowered production.

2. About three-quarters of the young "cans" alive at the end of the summer die within a year. Hunting accounts for at least two-thirds of these deaths.

3. About half the adult females and slightly less than half the adult males die each year. Hunting accounts for about half the adult deaths, with the females probably suffering the greatest loss. This difference in the mortality of the sexes probably accounts in part for the sex ratio in the population being distorted in favor of adult males. (The evidence is that the same probably holds true for most of the important diving duck species.)

4. A higher proportion of canvasback immatures and adult females are shot early in the season than is true with adult males. Bandings show that during September, October and November, 76 percent of the immature and 61 percent of the adult female kill takes place. With the redhead the kill is even more concentrated early in the season. Banding shows 89 percent of the recoveries from Manitoba-banded birds being taken prior to December.

5. The "can" and redhead are not widely distributed and the principal kills take place in a relatively few areas. For example, in Michigan, 81 percent of the redhead band recoveries were taken at Houghton Lake area, Saginaw Bay, Lake St. Clair and the Detroit River.

6. An analysis of canvasback banding data indicates that with this species hunting regulations have a material effect on the size of the kill.

These are a few of the facts that have been gleaned from unpublished data which have been analyzed by researchers at the Patuxent Wildlife Research Refuge and elsewhere.

Certainly hunting has a greater effect now than in the past. Since the early 1910's the number of duck hunters has doubled and from the mid-thirties, quadrupled. This large increase in hunters, combined with shrinking habitats and more effective guns and ammunition, is something to be reckoned with. Evidence is piling up which indicates that with black duck and mallard populations we may be taking close to the limit the population can safely stand, and with some other species, such as the canvasback, redhead and ringneck, we may be overshooting.

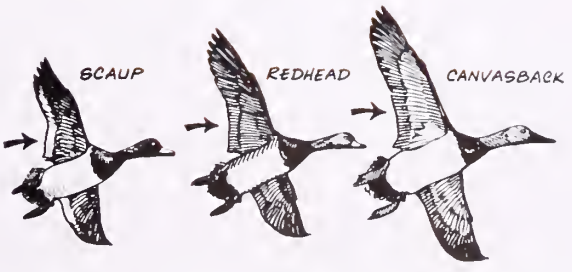
Two primary methods are used in controlling the harvest and in preserving the species, hunting regulations and habitat management. It is important to realize that a given set of regulations and habitat management practices will influence the various species differently. For regulations and habitat management to meet today's requirements, they should be designed to meet the needs of individual species or groups of species having similar characteristics.

In the future the management of our waterfowl must be on a much more efficient basis than it has been in the past. This is necessary, not only because of shrinking habitats and fewer ducks, but to satisfy the recreational needs of as many hunters as possible. This means harvesting each species in relation to its status and distributing the harvest among as many people as possible.

Research, if given the necessary support, can carry out the studies, analyze the data and supply the administrator with the facts needed to carry out a more efficient management program. Although research should be the foundation upon which the management program is built, it cannot make the program work. This is up to the administrator and the hunter.

If we are to develop an effective species management program in the future, *the key to its ultimate success will be the hunter himself.* He must be proficient at identifying ducks and geese, not only in the hand, but in front of the gun. He must learn to control his fire when in doubt as to the species coming over his blocks. He must make a real effort not to squeeze the trigger until the bird and its marking are clearly visible. This also will help conserve birds by materially reducing crippling loss. Since the duck population in the future must be rationed —there are only so many to go around—the hunter must demand and support the apprehension of violators who kill sizable numbers of birds which should be available for the gunner who is abiding by the rules of the game.

## How To Tell Them Apart




FROM BELOW, WINGS OF CANVASBACKS AND REDHEADS HAVE UNIFORMLY DARK EDGES. IN CONTRAST, SMALLER SCAUP SHOW WHITE SPECULUM, OR "WINDOW."

U. S. Army Photo

Warden W. C. Irby (now retired) and biologist Redd release mallard ducks at Pickett.

*Paying Dividends in Good Hunting:*

# Teamwork at Camp Pickett

By JOHN B. REDD, *District Game Biologist*

IN August 1956 the Virginia Commission of Game and Inland Fisheries entered into a unique cooperative agreement with the Department of the Army to operate 47,000-acre Camp Pickett in south-central Virginia as a controlled public hunting and fishing area. The Commission agreed to help administer the area as a game management unit and furnish law enforcement officers, hunting and fishing regulations, boundary signs and off-limits signs, bulldozed fire breaks planted to grass and clover for game usage, seed and plants for wildlife food patches, and game biologists to supervise the game habitat improvement work.

Cardboard "OFF LIMITS" signs to designate the various areas at Camp Pickett closed to all hunting and fishing because of dangerous unexploded ammunition, storage and training areas and dwellings were posted with the help of game wardens and game managers prior to the 1956-57 hunting season. Because these signs deteriorated, all 2,000 have now been replaced by metal signs.

The Army has begun a two-year operation to thin the timber located on Camp Pickett. One phase of this operation, the salvaging of merchantable timber from fire lanes, has reduced the cost of bulldozing the lanes. Approximately 21,000 yards of roads have been cut back to act as fire lanes, and these are to be extended each year as money for the work becomes available. Six miles of these lanes have been put into cultivation for game management purposes.

During February 1958 work was begun on the first section of fire lane, and approximately 30 acres were cleared of all timber and stumps. The bulldozed area varied in width from 80 to 120 feet. After clearing, the ground was prepared for seeding with various grasses. Fifty tons of agricultural limestone were spread on the area during disking operations, and approximately 7.5 tons of 2-12-12 commercial fertilizer were applied during the seeding of the fire lane.

The grasses sown were Kentucky 31 fescue, rescue grass, ladino clover, and, on the steeper slopes, sericea lespedeza. The grasses were not sown in combination, but in plots. Korean lespedeza was sown on the edges of the bulldozed area along the full length of the fire lane.

This planting will provide succulent vegetation for deer, turkeys, and rabbits on an area where food for wildlife was extremely limited before.

In 1957, 296 annual game-bird mixture plantings one-quarter acre in size were established. The ground was plowed and disked twice before planting. Eighteen hundred pounds of seed and 15 tons of fertilizer, sown with a grain drill, were used on these plantings.

During August, 80 acres of land were cut over with a rotary cutter (bush-hog). The vegetation on certain areas of Camp Pickett is at the stage where it offers very little to game in the form of food and cover. The removal of this vegetation resulted in a succulent growth of various weeds and grasses that was readily eaten by deer and rabbits.

Some 27 plantings of winter food were made during the fall of 1957. One-half acre in size and containing a mixture of small grain and clover, they are utilized extensively by deer, rabbits and turkeys.

Management plans for 1958 called for the establishment of 128 annual "game-bird mixture" (Korean lespedeza, rape, milo, millet, buckwheat, peas and soy beans) plantings of one-half acre in size, and, during August 1958, the rotary mower was again used to improve the wildlife habitat of various areas at Camp Pickett.

Several species of game birds were released at Camp Pickett during 1957. Ninety-eight second-generation mallards six to eight weeks old were banded and released during June. Two of these banded ducks were recovered

## *Game removed from Camp Pickett management unit*

**Total game killed at Camp Pickett during 1956-57 season by months**

| Month | Deer | Turkey | Quail | Rabbit | Squirrel | Raccoon | Duck | Fox | Snipe |
|---|---|---|---|---|---|---|---|---|---|
| November | 32 | 5 | 289 | 195 | 36 | 5 | 101 | 2 | 1 |
| December | 28 | 16 | 230 | 401 | 13 | 2 | 36 | 4 | 4 |
| January | 6 | 2 | 283 | 256 | 1 | 2 | 21 | 0 | 1 |
| Total | 66 | 23 | 802 | 852 | 50 | 9 | 158 | 6 | 6 |

During the 1957-58 hunting season,
approximately 5,000 hunter man-days were spent in obtaining the reported game.

**Total game killed at Camp Pickett during 1957-58 season by months**

| Month | Deer | Turkey | Quail | Rabbit | Squirrel | Raccoon | Duck | Fox | Snipe |
|---|---|---|---|---|---|---|---|---|---|
| November | 23 | 20 | 214 | 503 | 90 | 17 | 122 | 8 | 7 |
| December | 21 | 8 | 342 | 745 | 151 | 8 | 15 | 4 | 2 |
| January | 0 | 2 | 233 | 656 | 44 | 2 | 9 | 1 | 0 |
| Total | 44 | 30 | 789 | 1904 | 285 | 27 | 146 | 13 | 9 |

during the hunting season.

Four releases of coturnix quail were made at Pickett during the summer. The total number of birds released was 345, and most were seven or eight weeks of age. All birds released were banded, and immature birds, hatched in 1957, carried an additional colored plastic leg band. Pairs and single birds were observed during the summer and early fall months, and several groups of young birds were observed by reliable persons. Census checks conducted during October and early November with dogs failed to indicate any coturnix on the area, however. No coturnix were killed at Camp Pickett during the hunting season, but one unbanded bird was killed two miles west of the nearby town of Blackstone.

Twenty-four immature male turkeys were banded and released on November 12, 1957. Six of these birds were recovered by November 30. No banded turkeys were killed after that date, but the remains of three banded turkeys were observed during the hunting season and one banded turkey was killed approximately one mile off the reservation in Brunswick County.

A fox reduction program, divided into two parts, was begun at Camp Pickett during 1957. During the first period—February, March and April—67 foxes were captured. During the second trapping period—September 9 to October 13, 1957—57 foxes were taken, as indicated below.

**Foxes removed from Camp Pickett during September and October 1957**

| Species | Male | Female | Total |
|---|---|---|---|
| Red | 19 | 14 | 33 |
| Gray | 14 | 10 | 24 |

During the second trapping period 33 traps were operated for 912 trap-nights and resulted in 16 trap-nights per fox capture. The fox reduction program was continued again this year.

**Foxes removed from Camp Pickett during the spring 1958 trapping period**

| Species | Male | Female | Total |
|---|---|---|---|
| Red | 18 | 31 | 49 |
| Gray | 27 | 22 | 49 |

The fox reduction program is carried on at Camp Pickett to lessen the chance of the spread of rabies and to reduce the predator pressure on small game, especially the rabbits.

Personnel of the Commission's law enforcement division play a leading role in the cooperative project. Camp Pickett, which lies in parts of Nottoway, Dinwiddie and Brunswick Counties, is patrolled by wardens J. R. Bacon, Nelson Phelps, J. W. Rives, C. H. Wells and D. L. Young to see that game and fish laws are strictly enforced.

The Commission is proud of this cooperative working agreement with the Department of the Army. Unquestionably, the cooperation received from the Commanding Officer, Lt. Colonel William C. Huber, has made this program the success it is. Results obtained in the first two years of this agreement have been outstanding. The Camp Pickett game management unit is an excellent example of how state and federal groups are working together to provide better hunting and fishing for Virginia sportsmen.

*A Close Relationship: Virginia's*

# TIMBER AND TURKEYS

By JACK V. GWYNN, *Game Biologist*

ORIGINALLY the wild turkey was found as far north as southern Maine, Michigan, and Minnesota, as far west as central Nebraska and Arizona and as far south as Florida, Texas and Mexico. The turkey has adapted to climates both hot and cold, moist and dry. It was found at elevations near sea level and at heights above 4,000 feet. All of this seems to point up its adaptability.

The turkey's requirements have been found to be more precise than the original wide distribution would indicate, however. The four basic requirements of the wild turkey are closely related, and the effectiveness of each is very much dependent on the presence or absence of the others. They are (1) maturity of forest cover; (2) diversity of forest types; (3) vast contiguous forested areas; and (4) protection from man.

It was no coincidence that the high turkey populations of colonial Virginia were found in the tall mature forests of those times. A preponderance of older trees results in an opening up of the understory because the heavy shade of the mature trees and the taking of moisture, minerals and sunlight by the larger trees provides stiff competition for shrubby growth. Thus mature forests are characterized by an open park-like type of ground cover which allows the turkey full use of his eyesight on which his safety depends. If a forest provides only thick brushy cover such as that which develops following a heavy timber cutting, it provides predators with concealment for closer approach while making the turkey's escape by running or flying difficult.

The larger, more mature trees are also important for the food they produce for the turkey in the form of mast, most important of which is the acorn. Young oak trees do not produce this food. Safe roosting places secure from ground attack are an additional benefit provided only by the larger trees.

In Virginia there are four basic forest types used by the wild turkey for food and shelter: the hardwood forest type, the coniferous or pine forest type, the mixed forest type, and forest openings or clearings.

Upland hardwood forest, which occupies over half the total forest acreage in Virginia, is often referred to as the key to successful turkey populations. This hardwood type is made up of oaks, hickories, yellow poplar and gum. Our bottom-land hardwoods occupy less than a tenth of the total forest area but are important in the Coastal Plains where they are found along the major rivers and their tributaries. If properly managed, these hardwood forests will provide turkey nesting, brood-raising, feeding and roosting areas.

The coniferous forests consist of loblolly, Virginia, shortleaf and white pines in that order of greatest acreage. They may be found in pure stands but are more commonly found in mixtures with hardwoods. These forest types provide shelter and roosting sites for the turkey. The mixed forest type of hardwoods and pines provides the advantages of both of the above types if at least 25 percent of the mixture is in young and mature pines of sufficient density to give good roosting cover and near-the-ground shelter.

Although the turkey is basically a forest game species, it, like many other game animals, needs the variety provided by breaks in the forest cover. These openings need not be large; one, two or three acres will suffice, and are most effective if well scattered throughout the range. Brushlands, grass or pasture lands, field crops or other annuals and various combinations of these provide areas for courting, dusting and sunning. Because they usually produce large numbers of insects, they are heavily used as brood-raising areas. Frequently they serve as nesting areas, and year around they will provide a variety of foods in the form of seeds, grasses, fruits, nuts and acorns. When they are well distributed over the turkey's range, they may account for some 25 percent or more of the actual range area.

In addition to maturity and diversity of forest cover, the turkey needs rather vast forested areas for survival. These large forested areas should be contiguous—close enough together for the birds to travel from one to another. This requirement rules out small isolated woodlands as potential turkey range.

Large forested areas are needed to maintain a turkey population of sufficient size for hunting. Several square miles of fertile land covered with forests of the proper types can provide the requirements for a number of turkeys, but only if poaching is controlled and hunting is limited will the isolated population survive.

A public turkey-hunting area would need a minimum of 15,000 acres—24 square miles—of contiguous cover. This minimum size could vary depending upon characteristics of the locality such as: the number of people in close proximity; the forest types present; the condition of these forest types and their distribution; whether grazing by domestic animals is allowed; soil fertility; and the type of forest management presently in effect.

The turkey needs protection from the man who grazes his domestic stock in the forest. This practice is not only

Second in a series of three articles on the wild turkey in Virginia by Upland Game Investigations Project Leader J. V. Gwynn.

poor forest management, poor watershed management and poor wildlife management; it has been shown to be poor livestock management as well. The turkey needs protection from the man who starts forest fires whether by accident or otherwise. Thanks primarily to the Virginia Division of Forestry and the U. S. Forest Service, most people have learned that no one benefits from deliberate burning. Most important, the turkey needs protection from the man who mismanages the forest land which he controls.

Today through ownership farmers have control of over half of Virginia's forest acreage. Together with other small private owners, they are able to direct the type of timber managements used on over 80 percent of these forest lands. The degree to which their forest management plans provide the requirements of the wild turkey will determine to a large extent the future of the turkey population in Virginia.

Even in colonial days the farmer wielded a tremendous influence upon the forest. When first settled by the colonists, the forests of Virginia were probably in fairly mature stages. Pines existed but were probably well mixed with the hardwoods.

Upon this scene came the tobacco grower whose cultivated crop rapidly depleted the fertility of the soil. Because land was cheap and readily available it was cleared, cultivated and then abandoned. The forest re-established itself following abandonment but this time the pine dominated the new growth since pine is one of the "pioneer species" which establishes itself readily on disturbed soil.

After the Civil War vast additional areas of cultivated lands were abandoned and much of this acreage was taken over by coniferous forest. In 1893 the *Virginia Handbook,* published by the State Board of Agriculture, noted the predominance of pines in the Coastal Plains and their abundance in the Piedmont.

It was at this time also that Virginia became well enough equipped with railroads to become profitable lumbering territory, and the logger took charge of the forest lands that were left. Vast clear-cutting operations developed, with large sawmills moving from place to place with the loggers. Generally the softwoods went first followed by the hardwoods. Heavy cutting was often followed by fire which burned away the slash and debris that remained, and the fires were followed by erosion.

By World War I, most of the valuable timber had been removed from the Tidewater and Piedmont areas where transportation was easiest and the timber most accessible. The demand for timber increased, however, and by 1918 logging operations had begun on the forests in the more inaccessible mountain areas. It was at this time that the proportion of hardwoods logged in Virginia increased sharply, and logging of hardwoods remained high until the late 1920's when the demand for all timber began falling to the low of the depression period in the early 1930's. By this time, little was left of Virginia's forests or Virginia's turkey populations.

The act of chopping down a tree or plowing up a forest clearing doesn't kill the wild turkey directly, but these acts, when carried out on a large scale, prevent young turkeys from being produced. Vast areas of nesting cover were destroyed either permanently or for many years. The remaining turkeys were more susceptible to predators, including man, since the turkey's requirements were no longer available.

Because of the close relationship of timber and turkeys, our forests must be properly managed if the wild turkey is to survive in Virginia. Unfortunately, much of Virginia's forest land is not being properly managed. There has been a healthy trend towards better management, but the small forest owner who owns over 80 percent of the total forest area has "dropped the ball" despite the fact that, by and large, the system of cutting that will bring the forest owner the highest annual return will also provide for higher turkey populations. This system is *not* the system in which the forest owner sells the best timber he has to the highest bidder with little thought given to the type of cutting practices used. Free professional assistance is available to the small forest owner from the Virginia Division of Forestry simply by contacting the state forester at Charlottesville or the local district forester's office. Consultant foresters also stand ready to assist forest owners.

It is apparent that at present many people in Virginia feel that the power to maintain the turkey population as well as the responsibility for wild turkey management lies within the grasp of the Commission of Game and Inland Fisheries. Actually this is true only in the sense that it is within the power of the Commission to influence the actions of the people it serves.

It is acknowledged that game laws are important tools of wildlife management in this age of modern travel, efficient weapons, and increasing human populations. Possibly because game laws are the only method of management familiar to many people, the manipulation of game laws is looked upon as an efficient means of managing wildlife populations. Perhaps the lack of knowledge of wildlife principles and requirements permits many to feel secure in the belief that, to increase the wild turkey populations, all that has to be done is to close the hunting season.

To correct this type of thinking, we have pointed out some of the requirements of the wild turkey and have stressed the close relationship between turkey populations and the forest lands of Virginia. We have shown that as man affects the forests he also affects the turkey. Because this is true, it is the men who own Virginia's forest lands that in reality have the power to provide the requirements for improved wild turkey populations.

The forest owner has always had the responsibility of providing a continuing supply of timber for man's use, to sustain the lumber industry and help provide a higher standard of living for himself and his neighbors. Simply through better forest management he can, in addition, provide the requirements necessary for higher turkey populations in Virginia.

The bald eagle is but one of the 83 species of birds which nest within the confines of the sanctuary.

## Rare Plants and Animals Survive in—

# LEBANON SANCTUARY

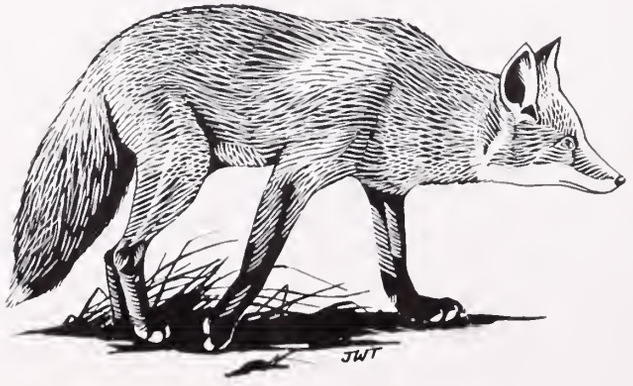
By JOHN W. TAYLOR, *Washington, D. C.*

JUST twenty miles from Washington, D. C., exists a stirring testimonial to wildlife conservation and protection. It is the Lebanon Sanctuary, perhaps less known than other larger refuges and sanctuaries but certainly one of the most unique and successful.

On this 458-acre miniature wilderness situated along the Potomac River in Fairfax County, Virginia, there have survived, almost miraculously, wild animals and plants that disappeared long ago from the rest of the densely settled Washington area.

Wild turkeys are not common even in the most wild sections of the state, and the fact that as many as 15 of these birds may live within Lebanon's acres is a telling example of what sanctuary and protection can do. It is possible to listen on a spring evening to the wild music of the turkey gobbler as it sounded to the first settler and then, after a half-hour's drive, to hear the steady throb of one of the world's largest cities.

Included in the sanctuary's mammal population is the red fox.



Among the 204 other species identified at Lebanon are such rarities as the golden eagle and the Bachman's warbler, America's rarest passerine bird. A pair of these mysterious, little-known warblers chose Lebanon as the site for their appearance in this region a few years ago. The bald eagle and the pileated woodpecker are among the 83 species that regularly nest within the confines of the sanctuary.

An extensive bird feeding program is carried on throughout the year, and its success can be readily gauged by the flocks of birds that constantly visit the feeding areas. The visitor is struck by the variety as well as the number of birds that come even to the window sill feeder.

The rich and varied mammal population at Lebanon is another example of what can be done under sanctuary conditions. Three different fox dens are known to exist in the area and there may be more. Skunk, opossum, squirrel, muskrat and raccoon are abundant, and deer are frequently seen in the sanctuary. Most interesting among the mammals present is the otter, which can be seen occasionally from one of the riverside trails.

Perhaps the richest of Lebanon's treasures is its flora. New botanical finds are constantly being made despite the intense study of the area that has already been conducted by naturalists and botanists. The presence of trailing arbutus, a plant so highly sensitive to environmental changes that it has become a rarity in settled regions, further attests to the necessity and value of areas

kept under complete protection. Other hard-to-find flowers common at Lebanon are the yellow lady slipper, trout lily and Virginia bluebell.

The concept of the Lebanon Sanctuary arose in the fertile mind of Dr. Paul Bartsch, a man respected by all who realize the value and scope of his work as a biologist and naturalist. After retiring from his active curatorship at the Smithsonian Museum in 1915, he and Mrs. Bartsch wished to continue their study of wild things in a natural setting, and Lebanon was the site of their choice.

The history of the tract of land, important in colonial times, would make a story in itself. George Washington, who lived just a few miles away at Mount Vernon, came each Sunday to services at Pohick Chapel which still stands a short distance from the sanctuary. Much has already been written of the mansion at Lebanon and its background, and the Bartsches have kept much of its original charm intact.

Since coming to Lebanon, Dr. and Mrs. Bartsch have maintained an absolute sanctuary for the wildlife of the area. In addition, they have planted a wildflower and fern garden that is known to botanists all over the world. Plants in these gardens have been collected by the Bartsches on trips throughout the East, and include rarities from the Smoky Mountains, Gaspé Peninsula and Jersey pine barrens.

Dr. Bartsch is anxious that Lebanon be visited and appreciated by more people, and eagerly welcomes all who come to see the wild things that thrive under his protection.

The sanctuary entrance lies just east of Route U. S. 1 a few miles south of Fort Belvoir. The road marked "Gunston Hall" will take you from Route 1 to the sanctuary.


## *Bird of the Month:*

# *The Tufted Titmouse*

WHEN a lady rushes up to me at a garden party and excitedly begins to describe a new bird she has seen, I am not taking too much of a risk to say even before she finishes, "titmouse." And she has every right to be excited, for the titmouse is a beautiful little bird. Since it is common, it is apt to be "discovered" as soon as one begins to take an interest in birds.

The tufted titmouse is a small bird, not much over six inches in length, dove gray in color, the back considerably darker than the breast, and with a tufted crest. It has two other noticeable marks: a beady black eye, like a tiny shoe button, and a pinkish-salmon wash along the sides. It occurs commonly throughout Virginia.

The titmouse and the little Carolina chickadee belong to the same family and have the same jaunty bearing, the same gentle, confiding nature, and the same lack of timidity in the presence of human beings. The titmouse comes readily to our feeding trays, carrying away an astonishing number of peanuts and greedily eating away at peanut butter or beef suet.

A convenient feeding place for them and a wonderful watching place for us can be made by boring holes through a piece of broom handle or a two by two stick, packing the holes with soft food and hanging it from a branch near a window. Melted suet, mixed with peanut scraps and small seeds, will be a great attraction.

Some people find the titmouse's song monotonous, as he calls again and again, without much change of rhythm, "Peter, Peter, Peter, or just, "Peer—peer—peer." Since he sings, however, on many of the cold, gray winter days, when most birds are silent, and since he is one of the first of the harbingers of spring, there is something appealing about his plaintive little notes.

In the winter, little troops of titmice, chickadees, tiny golden-crowned kinglets and perhaps one of the more uncommon brown creepers move through the bare woods, adding interest to hours that may otherwise be birdless.

The only time the titmouse seems to resent interest on the part of his human friends is when they come too close to his nest. Then both male and female dart about one, though never at one, making harsh, complaining notes. The nest is always in a hole in a tree, sometimes the discarded nest-hole of a downy woodpecker, more often a little natural cavity. Usually it is in a small tree, and not over 10 or 15 feet from the ground. Here with only a few scraps of lining to protect them, the tiny eggs are laid. And here in safety from most enemies the six or eight young titmice are hatched and then sent out to join the roving bands of their kind.

—Dr. J. J. Murray


## TWIN WOODSMEN

Lots of youngsters collect things from the woods, but few have the variety found in the collection of John and Roy Swartz, Jr., of Covington.

The Swartz brothers are the 9½-year-old twin sons of Mr. and Mrs. Roy Swartz of 613 Bridge Street. They are twins in looks and in interests for they work together to find things in the outdoors. Encouraged by their mother and a close friend of the family, Wayne Hypes of the Soil Conservation Service, the Swartz twins have gathered a collection of things from the woods that includes deer antlers and feet; rabbit feet and tails; muskrat skins; snake skins; many kinds of animal bones; bracken fungi; turtle shells; wasp globes, and birds' nests.

Commission Photo by Harrison

Both boys are quite good at drawing and coloring scenes from the woods.

Both boys spend much time fishing on the stream near their home and on the Jackson River. This summer Roy caught 24 fish and John caught 18.

## *Wildlife Ramblings*

### The Miracle of Hibernation

When winter comes to our land, the creatures of the woods have no warm houses with furnaces to keep them comfortable. Winter to them is a period of ice and cold with little or no food. Many creatures cannot live in the winter as they did in the summer months, so nature has created a miracle called hibernation. The animals that are unable to stand the cold weather go into a long deep sleep underground and live on the fat they accumulated during the summer. In this dormant condition they use very little energy and their body temperatures drop to the point where they are barely alive.

Because they are warm blooded, only a few mammals hibernate. Perhaps the "hibernatingest" of them all is the woodchuck or groundhog, who eats all summer long. When the cold autumn days arrive, he waddles down his long winding tunnel and crawls into a grassy bed. From the back wall he scrapes off dirt and seals the entrance to his sleeping chamber to keep out intruders. Then the 'chuck rolls up in a ball and falls into a deep sleep which lasts several months. His normal breathing rate is reduced from 2,100 times an hour to only 10. His body temperature drops from 100 degrees to about 57 to 40 degrees.

Photo of hibernating bats by Harrison

The bat is another mammal that becomes inactive in the winter. He hangs up in a cave while the cold winter winds blow outside. The temperature in his sleeping quarters must be between 30 and 40 degrees at all times. If the temperature should go above or below that, the bat will awaken from his sleep and move to a more suitable location. His body temperature will drop to almost that of the surrounding air.

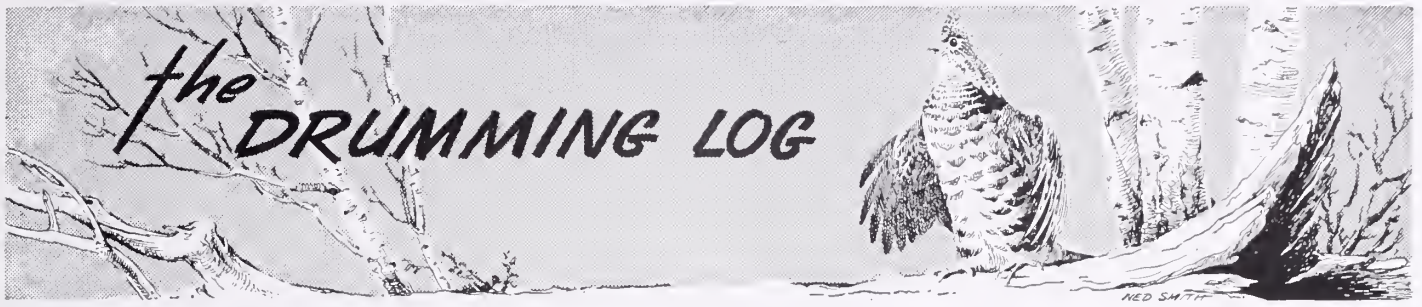
The black bear is a hibernater, too, but he does not go into a deep sleep. The bear's breathing is the same during both summer and winter although his body temperature is somewhat lower during the sleeping period. The bear will select a brush pile or a hollow tree to curl up in and will fall asleep, but can be easily aroused.

Skunks, raccoons and chipmunks are other mammal hibernaters. The 'coon is a very light sleeper. He selects a den tree and uses it when the weather really gets cold, but will leave his den in search of food when the going is not so rough.

Reptiles and amphibians, cold-blooded creatures, have no defense against the cold weather and must hibernate. Cold-blooded animals have to find a place that never gets below freezing because they too will freeze, since their bodies assume the temperatures of their surroundings. Most reptiles burrow down in the ground in the winter and the farther north they are, the farther down they must dig in order to get below the freezing line. Water turtles bury themselves in the oozing mud of a marsh or on the bottom of a lake or pond.

Some of the fresh-water fishes that live in warm water will hibernate in a fashion too. When the water gets cold, they will seek the deepest parts of the lake or stream where the temperature remains the same the year around. Carp will often squirm around in the mud at the bottom of the lake until they are almost covered and will thus spend the winter.

In the insect world, many of the adults die at the end of the summer and their offspring live through the winter in a larva or pupa stage which is better equipped to survive cold winter.—George H. Harrison




### Maymont Wildlife Exhibit Opens

The first five animal exhibits in the Thalhimer-Virginia Wildlife Exhibit at Maymont Park in Richmond will be opened to the public Sunday, November 2, from 3:00 to 6:00 p.m., according to the Richmond Department of Recreation and Parks. Financed by gifts from Mr. William B. Thalhimer, Sr., Mr. E. Claiborne Robins and Mr. Richard S. Reynolds, the initial phase of the development will include habitats for foxes, raccoons, opossums, weasels and aquatic birds. Brief ceremonies at 3:00 p.m. near the parking lot entrance to the exhibit, to be presided over by Mrs. Enders Dickinson, III, president of the Thalhimer-Virginia Wildlife Executive Committee, will be followed by guided tours of the five habitats.

### Curfew on Dogs Ruled Legal

The city of Hopewell has the right to impose a curfew on dogs while state game wardens are canvassing the city for strays and unlicensed animals, Attorney General Harrison ruled recently. Harrison said the ordinance, allowing the city manager to require owners to confine their dogs while the round-up is underway, is clearly authorized by Hopewell's charter and is not in conflict with state laws.

### Kodiac Bears Given a Plug By Professor

A University of Michigan professor thinks he's resurrected the key to conservation of the world's biggest bear from a botany course he took 36 years ago.

Prof. Dow V. Baxter, a forest pathologist in the school of natural resources, has a defense of Kodiak bears, the 1,500-pound behemoths that roam Kodiak Island off Alaska's southern coast.

The bear is under fire by commercial fisherman because it eats salmon on spawning runs up Alaskan rivers.

However, says Professor Baxter, the bear's scavenging may be a blessing in disguise, for also present in the rivers is saprolegnia, a water mold that grows on dead insects and fish.

Saprolegnia spores spread from the dead fish, infest salmon eggs, and prevent hatching, Professor Baxter explains.

To him, a veteran of 17 summers in the Alaskan bush country, "the mass of wet cotton-like threads of saprolegnia on dead salmon inevitably brings to mind graduate student days and mastering techniques for observing its growth under various conditions in a mycology course."

"He's a good guy—he feeds me well and takes good care of me—but he just can't shoot straight!"

But the bears (valued at $2,000 to $2,500 as hunting trophies) could be doing a good job of making streams healthier for salmon eggs by clearing away large numbers of dead or dying moldy fish that would only serve to contaminate the waters with saprolegnia, Professor Baxter declares.

### New National Wildlife Refuges

The newest addition to the national wildlife refugee system came into existence in August when Secretary of the Interior Fred A. Seaton signed a document giving official refuge status to certain lands along the Mississippi River between Rock Island and Alton, Illinois. The new refuge, comprising some 20,000 acres in Illinois, Iowa, and Missouri, will be known as the Mark Twain National Wildlife Refuge. Other refuges recently established are Troy Meadows Refuge, Morris County, New Jersey; Mariposa Refuge in California; Oak Orchard Refuge in New York; Swan Island Refuge, Sagadahoc County, Maine; Fish Springs Refuge, Juab County, Utah; Day County Waterfowl Production Area in South Dakota; DeSoto Bend Refuge on the Missouri River; Klamath Marsh Refuge in Oregon; and Erie Refuge in Pennsylvania. Land purchases are paid for by duck stamp funds as such funds become available.

### Waterfowl Ducks Behind Iron Curtain

American migratory waterfowl have been "ducking" behind the Iron Curtain—and some of them have stayed there, Department of the Interior bird banding records indicate. Reports from the USSR Academy of Sciences indicate that some species of ducks and geese banded in Alaska, Canada and some of the western states migrate westward to Russian lands. The bulk of the 76 bands recovered in the USSR have been taken from pintails and snow geese. The USSR is also banding migratory waterfowl, and some Russian-banded birds have been reported in Canada and Greenland.

# COMMISSION BRIEFS

### *Essay Contest Cited*

The 12th Annual Wildlife Essay Contest is underway and all Old Dominion pupils in grades 5-12 inclusive are eligible to enter when their school principal's entry card has been sent to the Commission in Richmond. Sponsored jointly by the Commission and the Virginia Division of the Izaak Walton League of America, the contest was recently described in a feature article in the Waltonians' official publication *Outdoor America*. The contest has grown in popularity through the years and is approved by the Virginia State Board of Education. All schools are urged to participate.

### *Game Division Meets*

On September 23 and 24, the Commission's game division technical personnel met at Camp Pickett for a review of current projects. Under the leadership of Richard H. Cross, Jr., chief of the game division, reports were given on the progress of habitat development on Camp Pickett which is done in cooperation with the 2nd Army, the status of the Iranian blackneck pheasant release program, research activities on deer, turkey and black bear, the study of Back Bay waterfowl food conditions, Hog Island waterfowl refuge, the Gathright Game Management Area, and the growth of licensed shooting preserves.

### *Jefferson Game Managers Meet*

Commission Photo by Harrison

A meeting of game managers, who carry out the ground work in the Jefferson National Forest-Virginia Game Commission Cooperative Agreement, was held September 12 at New Castle. Game managers work with district game biologists on game management units of several thousand acres and are responsible for law enforcement, habitat improvement, trail clearing, predator control and research activities on their areas. John McLaughlin, supervising biologist on the Jefferson Forest, conducted the review of progress and problems with the assistance of U. S. Forest Service personnel and other members of the Commission's field force.

### *Virginia Cooperating in Southeast Deer Disease Study*

At the recent meeting of the Commission's Game Division at Camp Pickett, Jack V. Gwynn, game research biologist, reviewed the program of the Southeastern Cooperative Deer Disease Study, in which Virginia is cooperating. Facilities have been provided at the University of Georgia's School of Veterinary Medicine for the laboratory work involved in the survey of the region's deer herds for various diseases that might affect either the deer themselves or the livestock industry. This fall, it is hoped that several hundred deer blood samples can be collected during the deer season in Virginia and sent to the laboratory. To date, no indication has been found that the deer herds harbor any of the dangerous livestock diseases.

## *Commission Personalities*

## Daniel Boone District Supervisor

BEN LEE BIRD, supervising game warden in the Daniel Boone District, joined the Virginia Commission of Game and Inland Fisheries September 1, 1932, as the Bland County game warden. Born in Bland County on February 26, 1895, "Ben" has remained a resident of that county. In 1920 he married the former Rosa Jones of Sanford, North Carolina. The Birds have one son, three daughters and four grandchildren.

After finishing high school at Bland, Va., Ben worked as a farmer, deputy commissioner of revenue and then commissioner in his home county before receiving his appointment as game warden. In 1954 he was elevated to the position of supervisor and now has responsibility for all game, fish and dog law enforcement in the southwest Virginia counties of Bland, Buchanan, Grayson, Lee, Russell, Scott, Smyth, Washington and Wise, and for game and fish law enforcement in Dickenson, Giles, Pulaski, Tazewell and Wythe Counties, where dog wardens enforce the dog laws.

The Daniel Boone supervisor works closely with his 16 game wardens and three conservation officers in patrolling such popular areas as Claytor Lake, South Holston Lake and the hunting and fishing areas of the Jefferson National Forest.

Ben Bird can direct his wardens in an efficient manner because all but one have radios in their cars. During his career he helped to stock the first deer in his area and also the first trout, in about 1932. These two programs have resulted in a sizable deer herd and a popular trout fishing season, although they have also brought him major problems—the illegal practice of spotlighting deer and the preseason catching of stocked trout.

He is the treasurer and an elder of the Leyburn Presbyterian Church in Bland C. H. and is also a charter member of the Triangle Sportsmen's Club of Bland and Tazewell Counties in Virginia and Mercer County, W. Va.

## Wildlife Questions and Answers

*Ques.:* **Does the mole spend the entire year in the shallow tunnels so often seen in our yards?**

*Ans.:* No it does not. Moles dig two types of tunnels. The tunnel which is so common to most people is known as the surface tunnel and is used during warm weather chiefly as a means for finding food. A deeper tunnel, from six inches to one foot below the surface, is used during the cold months and during extremely dry weather.

*Ques.:* **Approximately how much food, particularly grain, will a common house rat destroy in a 12-months period?**

*Ans.:* It has been estimated that a pair of rats will consume the equivalent of a 100-pound sack of grain in 12 months. If we multiply this by the millions of


rats we have in the United States, it becomes obvious how much it costs us annually to feed these rodents.

*Ques.:* **What is the average number of opossums in a normal litter?**

*Ans.:* Under normal conditions the female opossum gives birth to 12 to 18 young in February or March. The young are extremely small at birth (gestation period of only 13 days) and continue to mature in the mother's marsupial pouch.

# LETTERS AND COMMENTS

Letters of general interest are welcomed. They should be signed, but initials will be used on request.

### Fire Ant a Wildlife Menace?

I JUST received the September issue of VIRGINIA WILDLIFE and was pleased to see the article on "Pesticides vs. Wildlife." I was particularly pleased to see someone bringing into the picture the economic values at stake in the fire ant eradication program.

I was disappointed, however, to find that you, along with others, are using the propaganda about fire ant damage to quail. The proponents of the fire ant eradication program have used Stoddard's information concerning the native fire ant and its effect upon quail, increased his figure by over 300 percent and applied them directly to the imported fire ant with no basis whatsoever in fact. To my knowledge there has been no detailed investigation of the relationship between the imported fire ant and any game species. This I do know for a fact, that in south Alabama and northwest Florida we are able to have excellent hunting and bobwhite populations coexistent with heavy populations of the imported fire ant. Also that in the almost 40 years that south Alabama has had the fire ant, game populations have shown a steady and very substantial increase. Certainly, if the imported fire ant were a serious menace to wildlife, these conditions could not exist.

*Dr. Maurice F. Baker, Leader*
Wildlife Research Unit
Auburn, Alabama

### Commission's Work Shows Results

YOUR "conservation license plate tag" is a worthwhile advertisement of the aims and purpose of the Commission, which are most forcibly expressed to me by the general improvement in the game supply which I see in the field each year. After all, this is the real test of the results of the Commission's work and as a native-born Virginian who was introduced to the rod and gun by his Dad about as soon as he could toddle, I have seen the steady improvement in hunting and fishing opportunities. Of course, the "old days" were far better in some isolated instances, such as my first acquaintance with wild turkeys within 10 miles of the nation's capital when I was a teen-ager, but by and large there is much more game and much better fishing now than ever existed in the early thirties when I was a kid.

*A. L. Handy, Jr.*
Arlington, Virginia

● *Painted 4½-by-10-inch metal tags to fit over car license plates, with the words "Game Resources Are Wealth" and "Help Restore Virginia's Wildlife" and illustrations of deer and quail in reflecting red and green colors, are sold by the Commission for 25 cents.*

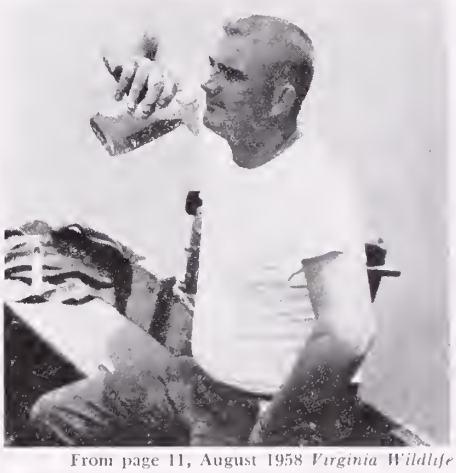
### Tarheel Praises Virginia Wardens

BEING a North Carolina Wildlife Protector assigned to a county just south of the Virginia line, I would like to put in a word of praise for the excellent cooperation we receive from your Virginia game wardens on checking out reports of game and fish law violations along the Virginia and North Carolina line. We frequently have occasion to work together and find this teamwork pays off in bringing to justice the unscrupulous violators who attempt to take advantage of the law abiding sportsman.

One of the features I especially enjoy in the magazine are the beautiful covers painted by artist Bierly.

*John D. Savage*
Wildlife Protector
Granville County, North Carolina

### "This Ain't Natcheral . . ."



From page 11, August 1958 *Virginia Wildlife*

THIS ain't natcheral. He ought to be drinking out of a fruit jar, one-half gallon preferred. Must be a Yankee???

*Dr. Waldo H. Jones*
Myrtle Beach, South Carolina

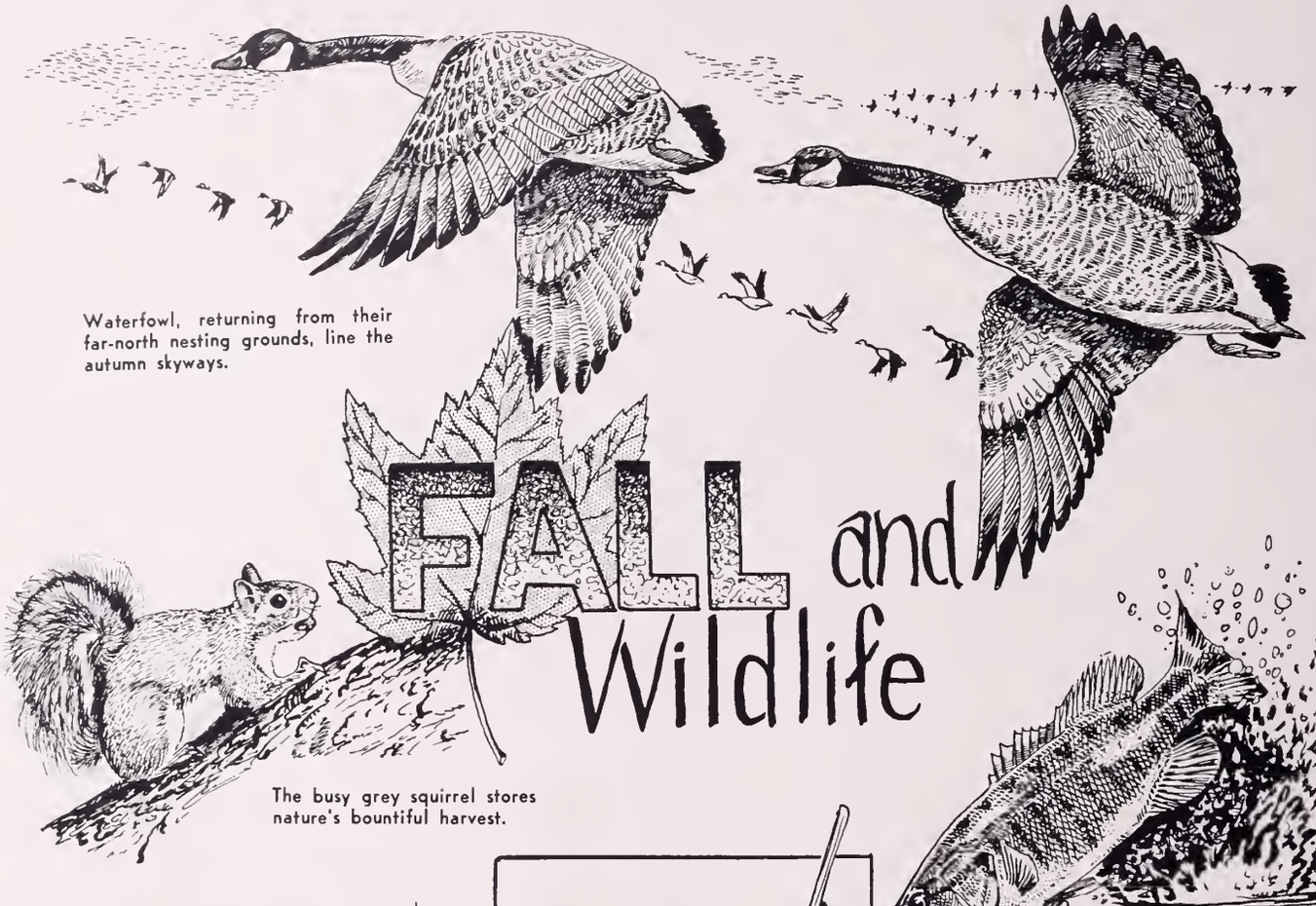
### The Good Word From Readers

I ENJOY your little magazine WILDLIFE more than I can tell you.

*Miss Elsie W. Oakley*
Charlottesville, Virginia

THANKS for a wonderful conservation magazine.

*Roland W. Gosnell*
Sykesville, Maryland



Waterfowl, returning from their far-north nesting grounds, line the autumn skyways.

# FALL and Wildlife



The busy grey squirrel stores nature's bountiful harvest.



The smallmouth bass fisherman may have some of his best angling from September until cold weather.

Fall is harvest time for wildlife—take only your legal share.

In the higher elevations some individuals may be preparing for a nap.

Winter is ahead for wildlife—don't forget them then.

D. RAVER